DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION
RADIO SERVICE

# RADIO STATIONS OF THE UNITED STATES

EDITION JULY 1, 1916

WASHINGTON
GOVERNMENT PRINTING OFFICE
1916

AMATEUR RADIO STATIONS—Continued.

SEVENTH DISTRICT—Continued.

ALPHABETICALLY BY OWNERS OF STATIONS—Continued.

| Call signal. | Owner of station. | Location of station. | Power. |
|---|---|---|---|
| | | | Kw. |
| 7FP | Trumbull, William L. | 365 McGrew St., Seattle, Wash. | 1.0 |
| 7JU | Tuerck, John K. | 495 Harrison St., Portland, Oreg. | .5 |
| 7VN | Van Olinda, Oliver S. | R. F. D. No. 1, Vashon, Wash. | .5 |
| 7VA | Vreeland, Thad. | 210 Graham Ave., Portland, Oreg. | 1.0 |
| 7WR | Walling, Raymond. | 946 S. 12th St., Salem, Oreg. | .5 |
| 7KM | Watkins, Leslie W. | Wheatland, Wyo. | .5 |
| 7SI | Weagle, S. A. | 2006 Cove Ave., La Grande, Oreg. | .5 |
| 7LF | White, Lester T. | 1090 Water St., Portland, Oreg. | .5 |
| 7WA | White, Ruel. | 313 W. 4th St., Vancouver, Wash. | 1.0 |
| 7MA | Wiley, Irving R. | 1214 East Madison St., Portland, Oreg. | .5 |
| 7AU | Wilkinson, Albert E. | Y. M. C. A. Bldg., Baker, Oreg. | .5 |
| 7BW | Williams, Charles E. | 8326 13th Ave. NW., Seattle, Wash. | .5 |
| 7DW | Willis, Cecil D. | 1316 Columbia St., Seattle, Wash. | .5 |
| 7WL | Wilson, Herbert A. | 365 14th St., Astoria, Oreg. | .5 |
| 7JW | Wilson, John C. | 235 N. 24th St., Portland, Oreg. | 1.0 |
| 7LW | Wollaston, Arthur L. | 221 N. 11th Ave., Seattle, Wash. | .5 |
| 7RW | Wright, Raymond F. | R. F. D., Port Orchard, Wash. | .5 |
| 7EY | Young, Farrel. | 422 B. 2d St., Pocatello, Idaho. | 1.0 |

ALPHABETICALLY BY CALL SIGNALS.

| Call signal. | Owner of station. | Call signal. | Owner of station. | Call signal. | Owner of station. |
|---|---|---|---|---|---|
| 7AC | Dailey, A. C. | 7DT | Dupes, Eldred C. | 7JH | Hurtt, John N. |
| 7AE | Clark, Gaylord S. | 7DU | McCoy, Harry. | 7JI | Harding, James R. |
| 7AF | Moore, Alvin. | 7DV | Sheard, Harold P. | 7JK | Wilson, John C. |
| 7AG | Moe, Edwin C. | 7DW | Willis, Cecil D. | 7JL | Jones, Lloyd W. |
| 7AI | Johnson, Clifford E. | | | 7JN | Richards, John, jr. |
| 7AP | Rosendale, Archie E. | 7EB | Galloway, Walter H. | 7JP | Jolly, Charles W. |
| 7AT | Deady, Joseph. | 7EE | Hawkins, Edward K. | 7JQ | Ray, James. |
| 7AU | Wilkinson, A. E. | 7EG | Denham, Ray A. | 7JR | Tolmie, J. R. |
| 7AV | Root, Charles W. | 7EH | Noorlin, Paul V. | 7JS | Ramsey, James S. |
| | | 7EI | Craig, Russell R. | 7JU | Tuerck, John K. |
| 7BA | Bischoff, Clarence L. | 7EK | Ives, Jesse F. | | |
| 7BF | Bay, Frank W. | 7EM | Divine, Louis R. | 7KC | Harker, Theodore C. |
| 7BL | Bennett, John S. | 7EN | O'Connell, John. | 7KH | Adams, Alfred L. |
| 7BN | Rose, Donald W. | 7EP | Peterson, Edward T. | 7KI | Harrington, H. O. |
| 7BO | Keinath, Alvin. | 7EY | Young, Farrel. | 7KJ | Armstead, James H. |
| 7BQ | Howard, Cecil C. | | | 7KK | Adams, LeRoy F. |
| 7BT | Boslar, Orin E. | 7FD | Bancroft, Harvey. | 7KM | Watkins, Leslie W. |
| 7BU | Barrell, Dana A. | 7FF | Faris, Frank E. | 7KO | Koehler, Frank. |
| 7BV | Joyce, Theodore W. | 7FI | Fraser, James E. | 7KR | Keefe, Robert M. |
| 7BW | Williams, Charles E. | 7FJ | Miller, Clinton E. | | |
| | | 7FK | Gale, Charles W. | 7LB | Mahn, LeRoy J. |
| 7CA | Crosby, Edward J. | 7FL | Ling, Frank Moy. | 7LD | Noel, Lionel S. |
| 7CD | Delancey, Clinton. | 7FP | Trumbull, Wm. L. | 7LF | White, Lester T. |
| 7CJ | Josephson, Carl L. | 7FQ | Lewis, Harold H. | 7LI | Cavender, Howard M. |
| 7CK | Larson, Elwood A. | 7FR | Rush, Floyd M. | 7LJ | Harder, Louis. |
| 7CN | Emigh, Charles. | 7FS | Horstman, Herschel J. | 7LL | Lunan, Leslie. |
| 7CP | McElwee, James. | | | 7LN | Lyman, Rollo. |
| 7CQ | Christianson, Herbert. | 7GB | Butterfield, Geo. H. | 7LP | Peck, Loyd A. |
| | | 7GC | Henny, George C. | 7LQ | Lindley, Harry. |
| 7CS | Spike, Clifford. | 7GE | Spencer, Guy E. | 7LS | Barrett, George G. |
| 7CT | Carpenter, Edw. L., jr. | 7GF | Gibbs, Francis F. | 7LU | Ludgate, Wallace G. jr. |
| 7CV | Clark, G. Warren. | 7GG | Mancs, Angelo C. | | |
| | | 7GO | Hagen, Bert W. R. | 7LV | Stense, Alvin. |
| 7DB | Bolstad, Archie L. | 7GP | Hunter, Guy A. | 7LW | Wollaston, A. L. |
| 7DC | Crockett, George D. | 7GQ | Reeder, Addis H. | | |
| 7DE | Aiken, Robert Leon. | 7GR | Gratke, Charles E. | 7MA | Wiley, Irving R. |
| 7DH | Tennican, Leonard S. | | | 7MF | Miller, George C. |
| 7DI | Goodger, Donnan. | 7HA | Andrews, Horton R. | 7MJ | Mead, Walter J. |
| 7DJ | Blagen, Henry W. | 7HD | Davis, Hubert A. | 7MK | Callender, Melville H. |
| 7DK | Drake, Edward F. | 7HE | Carroll, Thomas M. | 7ML | Mason, Howard F. |
| 7DL | Mason, Dwight A. | 7HK | Mahler, Harold F. | 7MR | Spiker, Emmett E. |
| 7DM | Minkler, Lee D. | 7HL | Longmire, Harold D. | 7MS | Steenson, Mark. |
| 7DN | Engholm, Bernard. | 7HN | Pinkman, Herbert N. | 7MT | Matthews, Harold. |
| 7DO | Deguire, Ollan. | 7HO | Hawkins, Ernest P. | 7MW | Mitchell, Walter. |
| 7DP | Dann, Percy W. | 7HQ | Hayden, Harry T., jr. | | |
| 7DQ | Drinker, Russell. | 7HR | Reichert, Howard G. | 7NC | Clodfelter, Nolan A. |
| | | 7HY | Hicklyn, Harold H. | 7ND | Grush, David R. |



AMATEUR RADIO STATIONS—Continued.

SEVENTH DISTRICT—Continued.

ALPHABETICALLY BY CALL SIGNALS—Continued.

| Call signal. | Owner of station. | Call signal. | Owner of station. | Call signal. | Owner of station. |
|---|---|---|---|---|---|
| 7NF | Tingstad, Anton R. | 7QD | Benoit, Neville R. | 7SL | Stinson, Leo. |
| 7NH | Nilson, George A. | 7QF | Chaffee, Arthur L. | 7SN | Norman, Stacy W. |
| 7NI | Learned, George H. | 7QN | Moore, E. H. | 7SP | Samms, Philip C. |
| 7NK | Nelson, Julius F. | | | 7SW | Swan, Emil. |
| 7NL | Goodger, Ernest F. | 7RC | Cook, Richard H. | | |
| 7NS | Sanborn, Ned. | 7RD | Runyard, A. Don. | 7TB | Borders, Lawrence. |
| | | 7RF | Ryeberg, Roy E. | | |
| 7OA | O'Connor, William C. | 7RH | Teeson, Robert. | 7VA | Vreeland, Thad. |
| 7OC | Helfort, Earle R. | 7RI | Hager, Clement S. | 7VB | Bird, Vernon. |
| 7OF | Allard, Ambrose. | 7RK | Kertson, Ross J. | 7VD | Ducette, Victor N. |
| 7OK | Bode, Hugo P. | 7RS | Starr, Eugene C. | 7VN | Van Olinda, O. S. |
| 7OM | Ormsby, Major. | 7RT | Trapeur, Robert E. | 7VP | Pitner, Veral. |
| 7ON | Nicholson, Wm. O. | 7RW | Wright, Raymond F. | 7VW | Fitzpatrick, George. |
| 7PF | Rasmussen, Viggo P. | 7SA | Maybee, Loren C. | 7WA | White, Ruel. |
| 7PG | Truesdell, Herbert M. | 7SC | Sparks, Aurelius E. | 7WC | Cates, Walter C. |
| 7PJ | Jones, Paul. | 7SD | Schurch, Edward C. | 7WJ | Kennedy, Will. |
| 7PK | Palmer, Robert S. | 7SF | Stoner, Lloyd E. | 7WK | Kleist, Walter A. |
| 7PL | Patterson, Fred. | 7SH | Schrotke, Christian. | 7WL | Wilson, Herbert A. |
| 7PO | Poole, Orell A. | 7SI | Weagel, S. A. | 7WP | Ralston, Graham W. |
| 7PV | Kraft, Vincent I. | 7SJ | Stewart, Glenn R. | 7WR | Walling, Raymond. |
| | | | | 7WS | Sparrow, William T. |

## EIGHTH DISTRICT.

[Headquarters: Customhouse, Detroit, Mich. The eighth district comprises the States of New York (all counties not included in second district), Pennsylvania (all counties not included in third district), West Virginia, Ohio, and Michigan (Lower Peninsula).]

ALPHABETICALLY BY OWNERS OF STATIONS.

| Call signal. | Owner of station. | Location of station. | Power. |
|---|---|---|---|
| | | | Kw. |
| 8ES | Aber, Ernest M., jr. | 352 W. Ferry St., Buffalo, N. Y. | 0.5 |
| 8BT | Ackerman, Edmund K. | 1698 E. 90th St., Cleveland, Ohio. | 1.0 |
| 8VO | Ackerman, John T., jr. | 330 Mathewson St., Flint, Mich. | 1.0 |
| 8ARX | Ackley, William J. | 72 Halstead Ave., Buffalo, N. Y. | .5 |
| 8AOR | Adams, Joy C. | 48 N. Wabash Ave., Battle Creek, Mich. | 1.0 |
| 8UY | Adams, Lucius O. | 85 De Russey St., Binghamton, N. Y. | 1.0 |
| 8AKU | Adams, Miles R. | Sanitaria Springs, N. Y. | .5 |
| 8ALN | Addis, Roy R. | 46 Jones St., Mt. Clemens, Mich. | 1.0 |
| 8DZ | Aker, Ellison E. | 520 Woodward Ave., Lima, Ohio. | 1.0 |
| 8AEQ | Albertson, W. Charles. | 5400 Stanton Ave., Pittsburgh, Pa. | .5 |
| 8RL | Alexander, Frank. | 34 Asbury St., Rochester, N. Y. | .5 |
| 8ALE | Alexander, Lot and Hoge. | 537 Center St., Grove City, Pa. | .5 |
| 8RS | Alger, Allan E. | 214 Arizona Ave., Lorain, Ohio. | 1.0 |
| 8AMJ | Allan, Donald. | 3237 Dayton Ave., Cincinnati, Ohio. | .5 |
| 8WC | Allyn, William P. | Glenville High School, Cleveland, Ohio. | 1.0 |
| 8AMG | Altdoerffer, Frank H. | 633 Maplewood Ave., Ambridge, Pa. | .5 |
| 8RN | Altman, Allen R. | 6710 Hudson Pl., Pittsburgh, Pa. | 1.0 |
| 8AJO | Amann, Joseph C. | 393 Oak Hill Ave., Youngstown, Ohio. | .5 |
| 8TX | Anders, Harry R. | Decatur, Mich. | .5 |
| 8IW | Anderson, Joseph D. | 631 E. 127th St., Cleveland, Ohio. | 1.0 |
| 8AAB | Anderson, L. R. | Youngstown, Ohio. | .5 |
| 8KH | Angel, Jay L. | R. F. D. No. 1, Bowling Green, Ohio. | .5 |
| 8KA | Ankerman, Roy E. | 803 E. Lima St., Wapakoneta, Ohio. | 1.0 |
| 8AMQ | Anson, Charles T. | Ausable Forks, N. Y. | .5 |
| 8AGG | Anton, William G. | 224 S. Rebecca St., Pittsburgh, Pa. | .5 |
| 8DW | Apger, Charles O. | 555 18th St., Detroit, Mich. | .5 |
| 8NL | Appel, Floyd. | 310 Short St., Erie, Pa. | .5 |
| 8NG | Arenson, William. | 241 W. Exchange St., Akron, Ohio. | 1.0 |
| 8JN | Arthurs, Biddle, jr. | 3046 Centre Ave., Pittsburgh, Pa. | .5 |
| 8APM | Auten, George C. | Oberlin, Ohio. | 1.0 |
| 8ADY | Atkinson, Earl W. | 723 S. Arch Ave., Alliance, Ohio. | .5 |
| 8ACR | Atkinson, Ward I. | 95 Rutgers St., Rochester, N. Y. | .5 |
| 8ANQ | Baisley, J. Everett. | 32 George St., Wyandotte, Mich. | .5 |
| 8APK | Bachtel, Alfred. | Akron, Ohio. | .5 |
| 8AAW | Baer, Walter D. | 350 Graham St., Pittsburgh, Pa. | 1.0 |
| 8ARF | Baillie, Howard L. | 204 W. Church St., Newark, Ohio. | .5 |
| 8AKO | Bain, Ovid. | 1731 E. Center St., Marion, Ohio. | .5 |
| 8AJI | Baker, Gerald M. | 123 Market St., Edinboro, Pa. | .5 |

of the disk in inches (at point where electrodes are mounted) by the number of revolutions per second, this giving the number of inches per second that the electrode travels. Using the fraction of an inch that the electrode travels in the duration of the spark as a numerator, the distance per second that the electrode travels as a denominator and multiplying by 1,500,000, the number of cycles per second for 200 meters, you secure a very close estimate as to the number of oscillations occurring during the passing of the spark. It should be easily possible to reduce this number to at least 35 and while that is considerably more than the necessary 4 yet it is a very great deal less than 300 or 400 which is about the usual result with the ordinary rotary gap.

The overall efficiency and range of any transmitter will be found to vary almost directly with the number of oscillations per spark, the range and efficiency increasing as the number of oscillations decrease. Poor resonance between the closed and open circuits, a poor or small antenna, a poor or long ground or any other bad condition in either circuit will be reflected in the behavior of the gap. A number of amateur stations have made remarkable records which violated every principle herein advocated but in every instance they will be found to have had the advantage of extraordinarily high antennae or have used excessive power or wave length and we can rest assured that we will be held more closely to the requirements of the law in the future.

M. B. West.

# QST's Directory of Calls

EACH issue until the appearance of the Department of Commerce's List of Radio Stations containing amateur calls, QST will publish all reported call-letters. You are urged to co-operate with us and help to make this as complete as possible. QST can perform no more important duty in these days of reorganization than to keep us all posted on this subject. Do your bit by telling us your call as soon as it is assigned you.

**First District**

| | | |
|---|---|---|
| Wallace E. Heckman | 119 Windemere Road, Auburndale, Mass. | 1AA |
| H. M. Lane | 27 Linnehan St., Cambridge, Mass. | 1AB |
| L. L. Perkins | 460 Walnut St., Brookline, Mass. | 1AC |
| Chas. S. Doe | 13 Artwell St., Milton, Mass. | 1AD |
| S. B. Young | 294 Ashmont St., Dorchester, Mass. | 1AE |
| Harvard Wireless Club | Harvard Union, Cambridge, Mass. | 1AF |
| Walter R. Weeks | 67 Pleasant St., Marlboro, Mass. | 1AG |
| Alfred Hall | Main St., Norfolk, Mass. | 1AH |
| Clayton A. Thompson | 142 Glenwood St., Lynn, Mass. | 1AI |
| H. Kurth | 126 Columbia St., Cambridge, Mass. | 1AJ |
| H. C. Bowen | 168 Belmont St., Fall River, Mass. | 1AK |
| G. R. Entwistle | 137 Sutherland Road, Brookline, Mass. | 1AL |
| Fullerton D. Webster | 12 Hampshire St., Everett, Mass. | 1AM |
| William C. Kohl | 75 Richardson Road, Melrose Hglds., Mass. | 1AO |
| R. W. Mathewson | 872 River St., Hyde Park, Mass. | 1AP |
| C. S. Gould | 123 Hamilton Ave., Lynn, Mass. | 1AQ |
| Benjamin B. Coleman | 193 Clasp St., Milton, Mass. | 1AS |
| Jacob Coolikoff | 48 Cutler St., Winthrop, Mass. | 1AT |
| C. D. Davis | 8 Cedar St., Wakefield, Mass. | 1AU |
| H. W. Randolph | 419 Chatham St., Lynn, Mass. | 1AV |
| Hiram Percy Maxim | 276 Whitney St., Hartford, Conn. | 1AW |
| J. A. Campbell | 9 Fairles St., Somerville, Mass. | 1AX |
| C. D. Tuska | 136 Oakland Terrace, Hartford, Conn. | 1AY |
| Geo. U. Readio | 62 Yale St., Springfield, Mass. | 1AZ |
| Arthur Ferguson | 52 Linden St., Everett, Mass. | 1BA |
| Stewart Perry | 38 Pleasant St., Winthrop, Mass. | 1BB |
| Ralph A. Reed | 8 Cedar St., Wakefield, Mass. | 1BC |
| C. J. Westman | 347 Cambridge St., Cambridge, Mass. | 1BD |
| Henry W. Wickes | 83 Woodside Ave., Winthrop, Mass. | 1BE |

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# Framing & Matting Industry Termi

In order to reduce the confusion about the orientation of mats and openings, pleas following terms when placing orders and in references to mats and frames. Thank

## Orientation of a mat and opening

**Landscape**: The mat or opening is wider than it is tall. (Fig.1 below)

**Portrait:** The mat or opening is taller than it is wide. (Fig.2 below)

**Square or Circle**: Both dimensions are the same.

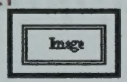
**At all times**, the shorter dimension should be stated first.

*Example:* Correct.....8 x 12 Incorrect.....12 x 8

**Bottom weighting**: When the image is matted and framed, the bottom border of the than the top border. (Fig. 3 and 4)

**Sample Figures of correct terminology**

Fig.1

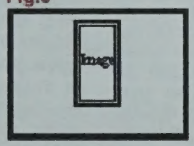



Mat: **Landscape**
Opening: **Landscape**

Fig.2

Mat: **Portrait**
Opening: **Portrait**

Fig.3



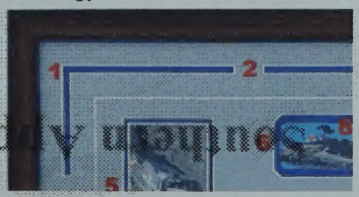

Mat: **Landscape**
Opening: **Portrait**
**Bottomweighted.**

Fig.4

Mat: **Portrait**
Opening: **Landscape**
**Bottomweighted**

## Types of mat cuts explained

These are some of the cuts available, and the terminology used to describe them. Ma one rectangular opening. See the <Extras> section of our pricing lists for pricing on other cuts.




1. Open v-groove, 3/16" reveal
2. V-groove gap
3. Closed v-groove
4. Message box, 3/16" reveal

| | | |
|---|---|---|
| Ernest Wood | 2 Baldwin Terrace, ——— ——— | 1BF |
| C. F. Shorey | 249 Grove St., Melrose, Mass. | 1BG |
| Wilbur H. Hardy | 776 Hale St., Beverly Farms, Mass. | 1BH |
| Geo. D. Darling | 30 Swains Pond Road, Melrose, Mass. | 1BI |
| E. S. Herrick | 5 Gladstone St., Greenwood, Mass. | 1BJ |
| D. F. Alexander | 209 Elm St., Bangor, Maine | 1BK |
| Homer E. Nichols | 513 Pequonnock St., Bridgeport, Conn. | 1BM |
| Russell Noyes | 62 Austin St., Newtonville, Mass. | 1BN |
| Clinton H. Turner | Haverhill St., No. Reading, Mass. | 1BO |
| F. W. Osborn | 21 Highland St., Marlboro, Mass. | 1BP |
| W. R. Mercer | 34 Webster St., Allston, Mass. | 1BQ |
| H. C. Ellison | 77 Russell Ave., Watertown, Mass. | 1BR |
| C. T. Caswell | 106 Franklin St., Framingham, Mass. | 1BT |
| C. R. Stevens | 9 Maynard Road, Framingham, Mass. | 1BU |
| L. G. Cummings | 83 Marlboro St., Boston, Mass. | 1BV |
| R. H. Shaw | 101 No. Central Ave., Wollaston, Mass. | 1BW |
| W. P. Southworth | 122 Chestnut St., Wakefield, Mass. | 1BX |
| L. B. Davis | 12 Phillips St., Watertown, Mass. | 1BY |
| W. W. Patten | 38 Franklin St., Watertown, Mass. | 1BZ |
| J. D. Conboy | 12 Beethoven St, Roxbury, Mass. | 1CA |
| L. H. Daykin | 339 Beacon St., Somerville, Mass. | 1CB |
| Alfred J. Sivigny | 67 Dalby St., Newton, Mass. | 1CC |
| A. P. Graham | 19 Gardner St., Woburn, Mass. | 1CD |
| Francis LeBaron | 407 Ash St., Brockton, Mass. | 1CE |
| F. C. Bowditch, jr. | 164 Rawson Road, Brookline, Mass. | 1CF |
| F. W. Woodworth | 173 Bunker Hill St., Charlestown, Mass. | 1CG |
| P. B. Holmes | 21 Rockledge Road, Newton Hglds., Mass. | 1CH |
| Henry Slayter | 90 Chester Road, Belmont, Mass. | 1CI |
| Arthur Kybert | 318 California St., Newton, Mass. | 1CJ |
| Philip F. Robinson | 149 Halls Ave., Braintree, Mass. | 1CK |
| E. C. McMahon | 9 Vernal St., Everett, Mass. | 1CL |
| Harry Finkelstein | 93 Maverick St., Chelsea, Mass. | 1CO |
| C. E. Howell | 139 Summer St., Watertown, Mass. | 1CP |
| B. F. Stewart | 217 Crafts St., Newtonville, Mass. | 1CQ |
| Charles R. Stevens | 19 Agassiz St., Cambridge, Mass. | 1CR |
| F. B. Swett | 154 Central St., Saugus, Mass. | 1CS |
| J. L. McGrath | 206 Fayette St., Wollaston, Mass. | 1CT |
| F. A. Hurd | 159 Bradford St., Everett, Mass. | 1CU |
| Ole M. Hovgard | 71 St. Mary St., Brookline, Mass. | 1CV |
| J. S. Day | 47 Madison St., Revere, Mass. | 1CW |
| Robt. S. McArthur | 2 Cambridge Ter., Cambridge, Mass. | 1CX |
| F. M. Oliver | 309 Washington St., Braintree, Mass. | 1CY |
| E. J. Gallagher | 16 Appleton St., Atlantic, Mass. | 1CZ |

**Second District**

No licenses issued up to time to going to press, but following stations temporarily authorized to transmit using old call, pending receipt of new licenses:

| | | |
|---|---|---|
| J. O. Smith | Rockville Centre, L. I. | 2ZL |
| Lester Spangenberg | Lake View, N. J. | 2ZM |

**Third District**

Temporary authorization pending receipt of new license:

| | | |
|---|---|---|
| Chas. A. Service, jr. | Bala, Penna. | 3QZ |

**Eighth District**

No accurate data, but via radio we have heard:

| | | |
|---|---|---|
| Mrs. Chas. Candler | 315 N. Perry St., St. Mary's, Ohio | 8NH |

**Ninth District**

Only one license issued up to going to press:

| | | |
|---|---|---|
| F. H. Schnell | 2220 Roscoe St., Chicago | 9AH |

Temporary authorization pending receipt of new license:

| | | |
|---|---|---|
| R. H. G. Mathews | 1316 Carmen Ave., Chicago | 9ZN |

# QST'S DIRECTORY OF CALLS

Fellows, devoting a half dozen pages per issue to calls got to where it detracted from the reading value of QST and scared us. Then we hoped to publish monthly supplements carrying advertising to finance the thing, but the Post Office Dept. has just come out best in an argument on that. So we resume in QST—two pages a month until we get them all. You can cut out this sheet and keep it with the January Supplement.

## FIRST DISTRICT

| | | |
|---|---|---|
| Franklin S. Huddy | 204 Bowen St., Providence, R. I. (Correction) | 1II |
| Geo. W. Nichols | 3 Linwood St., Saugus, Mass. (Correction) | 1IN |
| Geo. E. White | 36 Cummings Ave., Wollaston, Mass. (Correction) | 1KR |
| Wendell L. Wright | 114 Exchange St., Rockland, Mass. (Correction | 1MF |
| Edmund Buckly | 1605 Gorham St., East Chelmsford, Mass | 1LV |
| Randolph G. Fairchild | 95 Grant St., Lynn, Mass. | 1OK |
| Winthrop P. Cody | 1596 Center St., Newton Highlands, Mass. | 1OU |
| Chas. A. Piltz, Jr. | Van Buren, Maine | 1OY |
| Elmer L. White, Jr. | 23 Reynolds Ave., Chelsea, Mass. | 1PC |
| Richard Morse | 907 Beacon St., Boston | 1PD |
| T. Stanley Marshall | 15 Braman St., Danvers, Mass. | 1PE |
| Henry F. Rand | 2 Gordon Terrace, Cambridge, Mass. | 1PG |
| Roger W. Osborn | 15 Olney Place, E. Lynn, Mass. | 1PH |
| Robert P. Webb | 53 Hinsdale Ave., Winsted, Conn. | 1PJ |
| Warren Potter | 15 Braemore Road, Boston | 1PL |
| Warren Sawyer | 50 Quint Ave., Allston, Mass. | 1PN |
| Ralph R. Hayes | 9 West St., Bar Harbor, Maine | 1PP |
| Frank W. MacDonald | 43 Ellsworth St., Portland, Maine | 1PQ |
| Sylvester Ahola | 13 Morgan Ave., Lanesville, Mass. | 1PU |
| Alton H. Gould | 299 Brackett, Portland, Maine | 1PV |

## SECOND DISTRICT

| | | |
|---|---|---|
| V. J. Fritch | 939 College Ave., New York | 2AA |
| C. R. Gernert | 41 Bridge St., Somerville, N. J. | 2AC |
| T. N. Whildin | Oakdale, L. I., N. Y. | 2AD |
| Wm. H. Hoppi | 365 Quincy St., Brooklyn | 2AE |
| Benj. Berlin | 1252 Flatbush Ave., Brooklyn | 2AF |
| Howard Terry | 25 Myrtle Ave., Keyport, N. J. | 2AG |
| John G. Eber | 5505 Third Ave., Brooklyn | 2AI |
| E. T. Buttner | 1376 Third Ave., New York | 2AJ |
| Carl J. Hunkins | Johnson Ave., Newark, N. J. | 2AK |
| W. N. Stanley | 451 Hancock St., Brooklyn | 2AL |
| C. J. Sedlak | 633 Main St., No. Bergen, N. J. | 2AN |
| R. J. Freeman | Aloah Rdo. Stn., Southampton, N. Y. | 2AO |
| Harry Blutstein | 723 Stone Ave., Brooklyn | 2AQ |
| Harvey Kennedy | 1965 Vyse Ave., New York | 2AS |
| Herman Fischer, Jr. | 146 Myrtle Ave., Irvington, N. J. | 2AT |
| C. J. Hauff | 1972 Honeywell Ave., New York | 2AU |
| F. S. LeRoy | 103 So. Maple Ave., Ridgewood, N. J. | 2AV |
| A. A. Heberlein | 768 Melrose Ave., New York | 2AW |
| Howard Blower | 664 East 18th St., Brooklyn | 2AX |
| Burton Greenburg | 332 East 67th St., New York | 2AY |
| F. J. Raufer | 50 Shepherd Ave., Brooklyn (Correction) | 2DV |
| L. F. Barry | 20 Morningside Ave., New York (Correction) | 2OH |

## THIRD DISTRICT

| | | |
|---|---|---|
| W. J. Blome | 3800 Liberty Heights Ave., Baltimore, Md. | 3DW |
| W. D. Siddall | 404 Sixth St., N. W., Washington, D. C. | 3DX |
| A. J. Gardenhour | 218 Park St., Waynesboro, Pa. | 3DY |
| A. W. Long | 148 W. Wayne Ave., Wayne Del. Co., Pa. | 3DZ |
| C. Greenberg | 7711 Botonic Ave., Philadelphia, Pa. | 3EA |
| A. J. Bryne | 5137 Columbia Ave., Philadelphia, Pa. | 3EB |
| H. C. Gronberg | 641 Massachusettes Ave., N. E., Washington, D. C. | 3EC |
| C. S. Horn, Jr. | 909 Monroe St., Wilmington, Del. | 3ED |
| C. F. Cook | Yardley, Bucks Co., Pa. | 3EE |
| A. Milroy, Jr. | 803 Monument Ave., National Park, N. J. | 3EF |
| R. A. J. Gallery | Edgemoor, Bethesda District, Md. | 2EG |
| W. Phillips, H. Densham | 140 Washington Ave., Collingswood, N. J. | 3EH |
| G. C. Sprouls, Jr. | 5530 N. American St., Philadelphia, Pa. | 3EI |
| R. V. Kendall | 1712 Milton Ave., Baltimore, Md. | 3EJ |
| R. S. Fenimore | 1319 Otis Place, N. W., Washington, D. C. | 3EK |
| S. J. Gustof | 104 McKean St., Philadelphia, Pa. | 3EL |
| A. S. Morgan | 314 W. Seymour St., Philadelphia | 3EO |
| Leroy Mickey | 2028 Croskey St., Philadelphia | 3EP |
| E. C. Densten | 1023 So. 46th St., Philadelphia | 3ER |

## FOURTH DISTRICT

| | | |
|---|---|---|
| P. C. Bangs | 29 Albemarle Ave., Atlanta, Ga. | 4AZ |
| P. H. Wall | 258 Plant Ave., Tampa, Fla. | 4BA |
| W. C. Rothrock | 517 Ridge Ave., Winston-Salem, N. C. | 4BB |
| W. C. Huggins | 7 S. 4th St., Wilmington, N. C. | 4BC |
| E. S. Bulluck, MD. | 307 N. 4th St., Wilmington, N. C. | 4BD |
| C. A. Roethlinger | 214 Campbell St., Wilmington, N. C. | 4BE |
| Wm. M. Sampler | No. 2 Frie Station, Macon, Ga. | 4BW |

## FIFTH DISTRICT

| | | |
|---|---|---|
| Ala. Polytec. Inst. | Auburn, Ala. | 5XA |
| Y. M. C. A. | Jackson, Tenn. (Correction) | 5YB |

| | | |
|---|---|---|
| C. E. Noll | 804 North Oregon St., El Paso, Texas | 5CM |
| C. R. Granberry | 711 West 7th St., Austin, Texas | 5CN |
| Fred James Marett, Jr. | 700 Stuart St., Houston, Texas | 5CO |
| A. W. Walton | 1323 West Park Place, Oklahoma City, Okla. | 5CP |
| Gerald Mora | 1601 21st St., Galveston, Texas | 5CQ |
| E. L. Durbin | 139 Riverside Ave., Little Rock, Arkansas | 5CR |
| Wm. Hardeman | Box 427, Waco, Texas | 5CS |
| James Milton Peck | 510 Monroe St., Little Rock, Arkansas | 5CT |
| L. B. Sartain | South Pittsburg, Tenn. | 5CU |
| Harvey W. Smith | 114 South Arno St., Albuquerque, New Mexico | 5CV |
| R. W. Goddard | State College, New Mexico | 5CW |
| College of Agr. & Mec. Arts | State College, New Mexico | 5CX |
| Howard Hughes, Jr. | 3921 Yoakum Boulevard, Houston, Texas | 5CY |
| Joseph Moran | 429 South First St., Clarksville, Tenn. | 5CZ |

## SIXTH DISTRICT

| | | |
|---|---|---|
| O. Schwendt | 1046 Blackstone Ave., Fresno, Cal. | 6DT |
| C. Scruggs | 1178 E. 47th St., Los Angeles, Cal. | 6DU |
| C. Stine | 1226 West 30th St., Los Angeles, Cal. | 6DV |
| J. B. Taylor | 111 Gaven St., San Francisco, Cal. | 6DW |
| C. W. Tilden | 1635 Waltman Ave., Los Angeles, Cal. | 6DX |
| H. F. Topping | 222 West Richmond Ave., Richmond, Cal. | 6DY |
| R. A. Tulp | 1225 Sycamore Ave., Highland Park, Los Angeles, Cal. | 6DZ |
| H. C. Seefred | 343 South Fremont Ave., Los Angeles, Cal. | 6EA |
| L. F. Seefred | 343 South Fremont Ave., Los Angeles, Cal. | 6EB |
| Dr. L. E. Waters | Suite 7, Mitchell Bldg., Anaheim, Cal. | 6EC |
| H. White | 822 East 4th St., Santa Ana, Cal. | 6ED |
| S. K. Whitehead | 138 North Bixel St., Los Angeles, Cal. | 6EE |
| C. G. Widing | 904 East 42nd St., Los Angeles, Cal. | 6EF |
| E. A. Williamson | 2101 Stockton Blvd., Sacramento, Cal. | 6EG |
| H. E. Wright | 315 Alvarado Court, Pomona, Cal. | 6EH |
| Ed. S. Carter | 7105½ Franklin Ave., Hollywood, Cal. | 6EI |
| J. V. Wise | Walnut-Grove, Cal. | 6EJ |
| N. Yale | 687 North 43rd St., Los Angeles, Cal. | 6EK |
| G. G. Mackey | 1526 Crenshaw Blvd., Los Angeles, Cal. | 6EL |
| L. T. Delimlow | 426 1st Ave., San Diego, Cal. | 6EM |
| H. A. Duvall and C. Esler | 4965 Wadsworth St., Los Angeles, Cal. | 6EN |

## SEVENTH DISTRICT

| | | |
|---|---|---|
| C. F. Kennedy | Kelso, Wash. | 7BV |
| C. A. Hoffman | 618 Sunset Ave., Seattle | 7BW |
| F. F. Taylor | 227 No. Millern, Burley, Idaho | 7BX |
| W. K. Bert | 1924 Ninth Ave., Seattle | 7BY |
| E. O. Robbins | 300 Fir St., Olympia, Wash. | 7BZ |
| E. A. Scharf | 6320 22d Ave., Seattle | 7CA |
| Miss Winifred E. Dow | 2329 So. K St., Tacoma | 7CB |
| A. F. Liffrig | Creston, Mont. | 7CD |
| H. G. Reichert | 818 No. L. St., Tacoma | 7CE |
| R. J. Alexander | 5046 So. K St., Tacoma | 7CF |
| C. J. Kennison | 1521 Alturas St., Boise, Ida. | 7CG |
| N. G. Carleston | 1067 E. Burnside, Portland, Ore. | 7CI |
| C. R. Capehart | 6314 So. Yakima, Tacoma | 7CJ |

## EIGHTH DISTRICT

| | | |
|---|---|---|
| W. S. Burkhart, Jr. | Cherry Hill, Reading, Ohio (Correction) | 8DI |
| Asbury G. Wilson, Jr. | 400 Hampton St., Wilkinsburg, Pa. (Correction) | 8BX |
| Wm. C. Glies | 508 E. North Ave., Pittsburgh, Pa. | 8EA |
| Russell M. Blair | 3930 Ivanhoe Ave., Norwood, Ohio | 8EB |
| M. Fay McDowell | 612 Mithoff St., Columbus, Ohio | 8EC |
| Jordan Ross | 92 Hobart St., Rochester, N. Y. | 8EE |
| Albert G. Heck | 301 Highland St., Mannington, W. Va. | 8EF |
| Chas. S. McCain | Moraine Park, Dayton, Ohio | 8EG |
| Wm. Morris Stormer | 9½ Cleveland Pl., Jamestown, N. Y. | 8EH |
| Abe I. Frankel | 207 Bannington St., Rochester, N. Y. | 8EI |
| Prescott G. Schlotterbeck | 1907 Washtenaw Ave., Ann Arbor, Mich. | 8EJ |
| Sidney S. Greenwood | 237 Augustine St., Rochester, N. Y. | 8EK |
| Thos. Myers, Jr. | 41 Michigan Ave., Buffalo, N. Y. | 8EL |
| Clarence M. Minnis | 740 Walbridge Ave., Toledo, Ohio | 8EM |
| Burton P. Williams | 3220 Orleans St., Pittsburgh, Pa. | 8EN |
| Wm. H. Griffiths | 491 Locust Ave., Washington, Pa. | 8EO |
| Lyle H. B. Peer | 409 Davis St., Elmira, N. Y. | 8EP |
| Wayne A. Copeland | 51 Center St., Warsaw, N. Y. | 8EQ |
| Roland F. Relyea | 50 Washington St., Warsaw, N. Y. | 8ES |
| Frederick O. Lee | R.F.D. No. 3, Seneca, N. Y. | 8ET |
| Allan L. Machesney | 3414 Parkview Ave., Pitsburgh, Pa. | 8EW |
| H. S. Burns | 111 W. John St., Martinsburg, W. Va. | 8EY |

## NINTH DISTRICT

| | | |
|---|---|---|
| Virgil Jackson McElroy | 315 N. Pleasant St., Independence, Mo. | 9GA |
| John Hay S. Lawson | Box 850—RR 1, Mt. Washington, Mo. | 9GB |
| E. H. Giddings | 414 North Broad St., Lanark, Ill. | 9GC |
| Harold DeRos Jones | 3900 Harriet Ave., Apt. 5, Minneapolis, Minn. | 9GD |
| Kenneth O. McBride | 812 S. Delaware St., Independence, Mo. | 9GE |
| James C. Hyde | 703 E. Hyde Park Ave., St. Joseph, Mo. | 9GF |
| Charles Ring Davis | 628 Obion St., Hockman, Kentucky | 9GG |
| Lucas Tylekens, Jr. | 104 S. White Ave., Kansas City, Mo. | 9GH |
| Everett C. Smith | Weedman, Illinois | 9GI |
| Nilie Edison Nofrey | Borden, Indiana | 9GJ |

| | | |
|---|---|---|
| Nola Radio School | New Orleans | 5YC |
| Miss. A. & M. College | Agriculture Colleeg, Miss. | 5YD |
| Univ. of Mississippi | University, Miss. | 5YE |
| Louis Falconi | Roswell, N. Mex. | 5ZA |
| Henry M. Harris | Waco, Tex. | 5ZJ |
| Paul E. Greenlaw | Franklinton, La. | 5ZK |
| Jno. M. Clayton | 1301 Welch St., Little Rock, Ark. | 5ZL |
| C. W. Vick | 1918 Smith St., Houston, Tex. | 5ZO |
| Hubert E. Deben | 1044 City Park Ave., New Orleans, La. | 5ZP |
| I. S. Roberts, III | Houston, Tex. | 5ZT |
| W. H. Tilley | Austin, Tex. | 5ZU |

## SIXTH DISTRICT

| | | |
|---|---|---|
| F. B. Stellson | 451 Rutliven Ave., Palo Alto, Cal. | 6AW |
| J. F. Brown | 295 Perkins St., Oakland, Cal. | 6AX |
| Lloyd Muller | 4156 25th St., San Francisco | 6BD |
| F. H. Diemal | 1281 21st Ave., San Francisco | 6BT |
| C. H. Keller | 5501 So. Park St., Los Angeles | 6BV |
| S. Hudd | 612 Anza St., San Francisco | 6BW |
| C. Vick | 218 Cortland Ave., San Francisco | 6BX |
| L. J. Smelser | 2329 Carleton St., Berkeley, Cal. | 6BY |
| R. McCormack | 804 Delmas Ave., San Jose, Cal. | 6BZ |
| S. Strong | 268 Jayne St., Oakland, Cal. | 6CA |
| G. S. Perkins | 210 G. St., San Rafeal, Cal | 6CB |
| R. H. Cornell, Jr. | 509 Washington Ave., Pt. Richmond, Cal. | 6CC |
| H. J. Scharr | 611 Allendale Ave., Oakland | 6CD |
| O. A. Harmon | 817 34th Ave., Oakland, Cal. | 6CE |
| Ira J. Kaar | Salt Lake City, Utah | 6ZA |

## SEVENTH DISTRICT

| | | |
|---|---|---|
| A. F. Hastings | Tacoma, Wash. | 7AE |
| Clifford Spike | Woodstock Apt. No. 2, Tacoma, Wash. | 7AF |
| Geo. Mossmon | Tacoma, Wash. | 7AJ |
| Howard Mason | 3335 33d Ave., S. Seattle, Wash. | 7BK |
| Rupert E. Kempf | 403 College Ave., Moscow, Idaho | 7CC |
| R. T. Galyean | 460 Miller Ave., Portland, Ore. | 7CR |
| Chas. L. Austin | 651 E. Salmon St., Portland, Ore. | 7DK |
| Jno. D. Hertz | 63 East 68th St., Portland, Ore. (Correction) | 7ZB |
| R. Earle Dawes | Bozeman, Mont. (Correction) | 7ZD |

## EIGHTH DISTRICT

| | | |
|---|---|---|
| Arthur L. Kent | 199 Court St., Binghampton, N. Y. | 8AC |
| Edw. J. Bennett | 1923 W. 75th St., Cleveland, Ohio | 8AE |
| Ralph Folkman | 12516 Locke Ave., N. E., Cleveland, Ohio | 8AF |
| Lloyd M. Grow | 312 Parker Ave., Toledo, Ohio | 8AG |
| John G. Johnston | 2240 Lawrence Ave., Toledo, Ohio | 8AI |
| Edwin B. Redington | 14 Tioga St., Waverly, N. Y. | 8AJ |
| Cyril J. Staud | 203 Rutgers St., Rochester, N. Y. | 8AP |
| Edwin G. Boyes | 170 W. Willis St., Detroit, Mich. | 8AQ |
| Edw. R. Wieneke | 406 Boston Blvd. W., Detroit, Mich. | 8AS |
| Frank A. Henry, Jr. | 808 Montgomery Ave., Detroit, Mich. | 8AT |
| Fordyce O. Murphy | 150 Hogarth Ave., Detroit, Mich. | 8AU |
| Jack J. Baxter | 1548 Robin wood Ave., Lakewood, Ohio | 8AV |
| J. R. Bxtresser | 99 Harvard Place, Buffalo, N. Y. | 8AW |
| Wm. A. Nealon | 1604 St. Claire St., Cleveland, Ohio | 8AX |
| Paul Marsal | 1527 Lakeland Ave., Lakewood, Ohio (Correction) | 8AY |
| Lee C. Evans | 1032 Asbury Ave., Cleveland, Ohio | 8AZ |
| Henry L. Ley | Canton, Ohio | 8ZV |
| K. A. Duerk | 1000 Wilhelm St., Defiance, O. | 8ZY |

## NINTH DISTRICT

| | | |
|---|---|---|
| John Palmer Peterson | 636 E. 43rd St., Chicago, Ill. | 9CR |
| Frank M. Baily | 525 Kenilworth Court, Clintón, Iowa | 9CS |
| Signal Elec. Mfg. Co., J. Stanley | Brown, Menominee, Michigan | 9CT |
| William A. Liggett | Virden, Illinois | 9CU |
| Walter Charles Koch | 226 12th St., Milwaukee, Wis. | 9CV |
| Wm. Adon Van Schoyck | Gibson City, Ill. | 9CW |
| Charles Beazley | 5703 Brexel Avenue, Chicago, Ill. | 9CX |
| Walter A. Stenberg | 2243 Roscoe St., Chicago, Ill. | 9CY |
| Irvin Johnson | 2505 North Spaulding Ave., Chicago, Ill. | 9CZ |
| Herman Gisseler | 2826 Fletcher St., Chicago, Ill. | 9DA |
| Harvey Mitchell Anthony, Muncie | Senior High School, Muncie, Indiana | 9DB |
| Willis L. Otto | Cambridge, Illinois | 9DC |
| Albert Ruff | 1622 Iowa Avenue, Superior, Wis. | 9DD |
| Lee Burl Wilcox | 311 West Park Ave., Angola, Indiana | 9DF |
| Elmer Benjamin Scribner | 1111 South 16th St., Sheboygan, Wis. | 9DG |
| John A. Gjelhaug | Baudette, Minn. | 9ZC |
| Francis F. Hamilton | Indianapolis, Ind. | 9ZJ |
| H. J. Burhop & W. C. Bridges | Manitowoc, Wisc. | 9ZL |
| Geo. R. Hammond | Oelwein, Iowa | 9ZQ |
| Minnesota Wireless Assn. | 416 Court House Bldg., Minneapolis, Minn. | 9ZT |

## CANADIAN

| | | |
|---|---|---|
| J. Picard | Bienville, Que. | 2AA |
| LaSalle Academy | Three Rivers, Que. | 2AC |
| J. Telmosse | Shawnigan Falls, Que. | 2AD |
| S. Jacobs | 30 Lincoln Ave., Montreal, Que. | 2AE |
| P. L. Milette | 230 Bloomfield Ave., Montreal, Que. | 2AI |
| Eric W. Farmer | Farnham, Que. | 3Z |

**WHAT IS THE WSA?** (WSA is short for Wireless Speaker Adapter) The **WSA** is a low powered AM broadcast transmitter that will transmit up to 100 feet to any AM radio. All you need to receive the signal is a standard transistor, portable, or home radio tuned to the output of the WSA.

**IS IT USABLE?** YES, with its exclusive built in AUTOMATIC VOLUME CONTROL that prevents distortion of sound. No need to constantly adjust volume input of WSA for this is done automatically.

**EXTEND your ENTERTAINMENT CENTER** to every room in your home and even to your yard. Now you no longer have to stay in the same room to enjoy your favorite records or tapes! Just take the music with you!

Want music in other parts of the house or yard but can't move your record or tape player there? No problem with WSA! Just place your radios where you want your sound and tune in to WSA attached to your record or tape player. NO DANGEROUS WIRES to TRIP OVER and hurt you or your guests!

**STEREO** can be broadcast by using 2 **WSA** units, one on each speaker, and 2 radios. Or feed both tracks into one **WSA** and use one radio. Flexability everyone will surely appreciate and really enjoy!

**CB & 2 WAY RADIO:** Have to monitor for an important call – but have to go into another room? Don't want to waste your or someone else's time by being stuck right by the radio? **Then WSA is just the thing you need! Just attach WSA to the speaker, take a radio with you and go about your business or pleasure!** AMATEURS–CB'ERS monitor nets anywhere!

**P.A. SYSTEMS:** Extend your public address systems without stringing more wire! Use it for paging moving personnel, or for portable extension speakers in yard or building.

**TV: FOR TV IT'S JUST GREAT!** Tired of shouting for someone to turn down the volume? Can't hear because of noise of kids or other reasons? Yes, this will keep you from enjoying your favorite programs! **Then WSA is what you need for your situation!**

Now with WSA you have the sound and the sound control right at your chair so you can regulate it if necessary. No need to turn up the TV sound so loud that you disturb others yet noise will not interfer. When the phone rings or you want to speak to someone, just

programs in any room of your home too! Keep peace in the family by keeping irritation from loud sound down.

**HARD OF HEARING: WSA is perfect for you!** You will really appreciate the ease of listening to your favorite programs on TV and the beautiful music of your records and tapes! Keep the radio right by you or use a earphone for complete ease and privacy. You won't disturb others with the loud volume you had to use before.

YES, a perfect gift for yourself or a loved one – friend or relative!

**SO MANY USES and advantages with WSA** there is just not enough space to tell but a few of them. You will find more and more uses for WSA as you use yours!

2 models are available on different frequencies so more than one may be used in one home. Also to allow you to choose one for the clearest spot on the dial to avoid interference.

**PRICE: ONLY $25.00 complete**
Includes connecting wire, antenna, 9 volt power supply, and Stereo Adapter kit. **Satisfaction Guaranteed or your money will be refunded.**

**An excellent gift -- for those who have everything!**

4 X 3 X 1½ inches, black chassis, grey front, 60 MW input power, jack for power supply.

**Model 65, output from 640 to 660 Kcs.**
**Model 76, output from 750 to 770 Kcs.**

*Personal from Herbert Salch – –*

*Short of space this time but would like to remind you of our FREE Bible offer –"Good News for Modern Man", the New Testament in modern English. It is yours just by asking for it. Why this offer?*

*Because God loves each of us, and He has so much that He wishes to give to us –– and I want to tell everyone so no one will miss out. We come this way in life but once.*

*God forgave me for my rebellion against Him and of my breaking His laws early in life. This is possible through His only Son Jesus Christ. He also wants to make you HIS Son!*

*Later at the age of 27 God miraculously healed my body in a second of time– without the help of man – of asthma, hay fever, neck defect (wore a brace and slept in traction for years) and other problems.*

Herbert Salch & Co. Woodsboro, Texas 78393

# NEWSLETTER

Number 5

Dear TUNAVERTER Customer;

Just a short NEWSLETTER to keep in touch and to let you know of the latest developments on TUNAVERTER. ALSO hints and kinks so that you can receive better performance and increase its use.

**CONTENTS:**

**Space Age Tunaverter.**
**New Booster Coupling Loop.**
**How to use 2 Tunaverters at one time.**
**–Wireless Speaker Adapter —**
**And MORE Interesting ITEMS!**

First a little about our new **SPACE AGE TUNAVERTER** that everyone is so proud of --that is the ones that have been fortunate enough to obtain one since introduction!

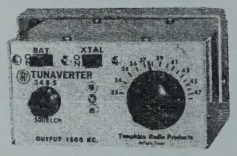
**SPACE AGE TUNAVERTER!**
**KEEP IN TOUCH! LISTEN TO NEWS AS IT HAPPENS ON UR BROADCAST RADIO!**

This is the TUNAVERTER for SERIOUS use-and also for ENJOYABLE HOBBY use! Wonder why? Just read on!

TUNAVERTER started 5 years ago as a tunable only converter. Then because of the many requests for drift free crystal monitoring the X line with crystal control circuit built in was born. NOW after many requests for SQUELCH for NOISE FREE monitoring the NEW SPACE AGE TUNAVERTER (S line) is born! Why do we call it the Space Age Tunaverter? **What other converter gives you - - - - -**

1. **Tunable coverage across the band!**
2. **Crystal control for drift free monitoring!**
3. **Interchangeable crystals across the band!**
4. **Peaking of every crystal frequency for maximum performance!**
5. **Noiseless monitoring between signals with built in Squelch!**
6. **Adjustable squelch for those weak signals!**
7. **All electronic squelch - no relays!**
8. **12 volt powered with auto battery!**
9. **ALL American made for quality!**
10. **Full 1 year guarantee on defective parts!**
11. **Unusual 2 week money back guarantee!**
12. **All this for ONLY $44.95 postpaid!**

**WHAT'S IT LOOK LIKE? HERE IT IS !**




**The SPACE AGE TUNAVERTER!**

Yes, the **Space Age Tunaverter** is ready to use as a tunable converter, nothing else is needed. Plug it into your auto radio with the coax cable supplied and **turn it on!**

Then if **drift free monitoring** is needed all you need to do is to plug in the crystal- no other expense! The crystal circuit is built in. **Then another bonus--The tuning control becomes a signal peaker in the crystal control position!** Each frequency will be peaked up to maximum performance- by YOU! No guessing.

NOW for the BEST! **FOR NOISE FREE monitoring just advance the SQUELCH** knob counter clockwise until the background noise is blocked. When the station transmits the squelch will open and the signal will come through loud and clear! You **won't have to continually listen to all that NOISE when no signal is received!**

X line TUNAVERTERS and tunable only models can be updated by adding the ST SQUELCH. It bolts right to the bottom of the Tunaverters to keep the package small -- performance is EXCEPTIONAL! For best performance we recomend it be used with the **BE85 battery eliminator** for auto use, and the **110 volt power supply** for home use.

**BOOSTER COUPLING LOOP!**

We received many requests for a Tunaverter that would have more output so that coupling to home and transistor receivers would be easier. This is not possible because it would then overload the auto radio.

# QST'S DIRECTORY OF CALLS

## FIRST DISTRICT

| | | |
|---|---|---|
| G. A. F. Werner | 12 Pratt St., Allston, Mass. | 1SK |
| A. A. Stockellburg | 54 Hano St., Allston, Mass. | 1SL |
| Wm. E. A. Dodge | 25 Sargeant Ave., Beverly, Mass. | 1SN |
| S. M. Zartarian | 211 Fayerweather St., Cambridge (Correction) | 1SP |
| Saymond Sorenson | 340 Beechwood Ave., Bridgeport, Conn. | 1SQ |
| Samuel S. Frizzell | Washington St., Duxbury, Mass. | 1UD |
| Allan C. Lawson | 10 Dikeman St., Waterbury, Conn. | 1UJ |
| J. H. Washburn, Jr. | 9 Wesley St., Somerville, Mass. | 1UK |
| E. L. Shepard | 76 Pine St., Bath, Me. | 1UL |
| Jerome Richardson | County Road, Ipswich, Mass. | 1UM |
| W. H. Cook | 184 Main St., Pittsfield, Maine | 1UO |
| Bert J. Atwell | 25 Poltoma St., Pittsfield, Me. | 1UP |
| H. W. Castner | 441 Congress St., Portland, Me. | 1UQ |
| John R. Walker | 140 Water St., Guilford, Mass. | 1UX |
| John Hardy | Foster St., Littleton, Mass. | 1UZ |
| Sands A. DenFish | 113 High St., Mystic, Conn. | 1VB |
| L. A. Morrow | 104 Charles River Road, Cambridge, Mass. | 1VC |
| Wilbur S. Wellington | 15 Lunda St., Waltham, Mass. | 1VD |
| H. B. Prescott | 110 Crescent St., Portsmouth, N. H. | 1VE |
| R. McK. Strickland | 384 Orchard St., New Haven, Conn. | 1VG |
| F. X. LaFrance | 93 Warren Ave., Pawtucket, R. I. | 1VH |
| L. W. Sayward | 87 Hamden Circle, Wollaston, Mass. | 1VI |
| E. M. Goddard | 17 Constance St., Maplewood, Mass. | 1VJ |
| Wm. Rosenbloom | 108 Thornton St., Revere, Mass. | 1VK |

## SECOND DISTRICT

| | | |
|---|---|---|
| A. A. LeMay | 1117 Hutton St., Troy, N. Y. | 2FA |
| Harold Cohn | 546 W. 146th St., New York | 2FB |
| Fred Clayton | 607 Emory St., Asbury Park, N. J. | 2FC |
| A. S. Brower | 19 South Clinton St., Poughkeepsie, N. Y. | 2FF |
| H. D. Schedler | 190 South St., Jersey City, N. J. | 2FH |
| Frederick A. Girard | Magnolia St., Montvale, N. J. | 2FJ |
| R. W. Freure | 439a McDonough St., Brooklyn | 2FK |
| F. McCartin, Jr. | 524 Paige St., Schenectady, N. Y. | 2FM |
| V. H. Schmitt | 158 Catherine St., Elizabeth, N. J. | 2FN |
| W. S. Blanchard | 401 Westervelt Ave., New Brighton, N. Y. | 2FO |
| Harold Peiler | 321 East 90th St., New York | 2FP |
| Jos. Pignone | 2065 Anthony Ave., New York | 2FQ |
| H. L. Stanley | Prospect St., Babylon, N. Y. | 2FS |
| W. E. Murray | 521 North James St., Peekskill, N. Y. | 2FT |
| Chas. I. Hertz | 501 West 144th St., New York | 2FU |
| N. S. Conover | 132 Milligan Place, South Orange, N. J. | 2FV |
| C. V. Macpherson | 590 West 172d St., New York | 2FW |
| R. V. D. Gedney | Center Ave., Little Falls, N. J. | 2FX |
| F. Frimerman | 334 East 100th St., New York | 2FZ |

## THIRD DISTRICT

| | | |
|---|---|---|
| Wilbur Clark | 919 South 51st St., West Philadelphia | 3HZ |
| H. L. Strang | 2020 First St., N. W. Washington | 3IL |
| Milton Bergey | 121 North Mill Road, Ashboarne, Pa. | 3IM |
| Leonard S. Wall | Elkins Park, Pa. | 3JI |
| J. E. Krone | 2908 West Ave., Newport News, Va. | 3JK |
| Merritt E. Gregory | 61 Ridgedale Ave., Morristown, N. J. | 3JL |
| Walter L. Henry | 3 Park Ave., South Richmond, Va. | 3JT |
| J. D. Simpson, Jr. | 600 West 25th St., South Richmond, Va. | 3JY |
| Robt. E. Linthicum | 2013 Benning Rd., N. E. Washington | 3KM |
| Harold Nielsen, Jr. | 8751 Frankford Ave., Holmesburg, Philadelphia | 3MN |
| Walter Rau | 2085 East Kingston St., Philadelphia | 3OW |
| Frank Olson | 1943 Harlan St., Philadelphia | 3PE |
| Jay V. Hoyt | Delaware, N. J. | 3VU |
| Howard S. Frazier | 5714 Hazel Ave., Philadelphia | 3WI |
| N. Hamilton | 4427 Sanson St., Philadelphia | 3WW |

## FOURTH DISTRICT

| | | |
|---|---|---|
| H. R. Martin | 915 7th St., Miami, Fla. | 4BH |
| Winford W. Brown | 214 7th St., Miami, Fla. | 4BI |
| Samuel Mishler | Route B, Miami, Fla. | 4BR |
| Maurice D. Clark | 1924 Swift St., Jacksonville, Fla. | 4BP |
| W. E. Wood | 809 Palm Ave., Miami, Fla. | 4BS |
| Don W. Moore | 78 Filer Ave., Miami, Fla. | 4CJ |
| Wm. A. Marsh | 135 Bayside Park, Miami, Fla. | 4DE |

## FIFTH DISTRICT

| | | |
|---|---|---|
| Lloyd B. Quinby | 2204 Brazos St., Houston, Tex. | 5CA |
| Chas. B. Galloway | 1516 Arch St., Little Rock, Arkansas | 5CB |
| Frank M. Corlett | 1101 East Eighth St., Dallas, Texas | 5CC |
| Clyde B. Mosteller | Box 404, Pilot Point, Texas | 5CD |
| Holmes Richter | 116 North Willow St., Dallas, Texas | 5CE |
| T. B. Ancell | 927 North Marsalis Ave., Dallas, Texas | 5CF |
| Marion Apple | 407 North Tennessee St., McKinney, Texas | 5CG |
| Arthur H. Holt | Kountze, Texas | 5CH |
| M. B. Patterson | Frost, Texas | 5CI |
| Ernest Albert Rodenhouse | 2738 Judson St., Shreveport, La. | 5CJ |
| Earl Sellers | Lucedale, Miss. | 5CK |
| James F. Burnes | 501 East Grand Ave., Marshall, Texas | 5CL |

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## FIRST DISTRICT

| | | |
|---|---|---|
| G. A. F. Werner | 12 Pratt St., Allston, Mass. | 1SK |
| A. A. Stockellburg | 54 Hano St., Allston, Mass. | 1SL |
| Wm. E. A. Dodge | 25 Sargeant Ave., Beverly, Mass. | 1SN |
| S. M. Zartarian | 211 Fayerweather St., Cambridge (Correction) | 1SP |
| Saymond Sorenson | 340 Beechwood Ave., Bridgeport, Conn. | 1SQ |
| Samuel S. Frizzell | Washington St., Duxbury, Mass. | 1UD |
| Allan C. Lawson | 10 Dikeman St., Waterbury, Conn. | 1UJ |
| J. H. Washburn, Jr. | 9 Wesley St., Somerville, Mass. | 1UK |
| E. L. Shepard | 76 Pine St., Bath, Me. | 1UL |
| Jerome Richardson | County Road, Ipswich, Mass. | 1UM |
| W. H. Cook | 184 Main St., Pittsfield, Maine | 1UO |
| Bert J. Atwell | 25 Poltoma St., Pittsfield, Me. | 1UP |
| H. W. Castner | 441 Congress St., Portland, Me. | 1UQ |
| John R. Walker | 140 Water St., Guilford, Mass. | 1UX |
| John Hardy | Foster St., Littleton, Mass. | 1UZ |
| Sands A. DenFish | 113 High St., Mystic, Conn. | 1VB |
| L. A. Morrow | 104 Charles River Road, Cambridge, Mass. | 1VC |
| Wilbur S. Wellington | 15 Lunda St., Waltham, Mass. | 1VD |
| H. B. Prescott | 110 Crescent St., Portsmouth, N. H. | 1VE |
| R. McK. Strickland | 384 Orchard St., New Haven, Conn. | 1VG |
| F. X. LaFrance | 93 Warren Ave., Pawtucket, R. I. | 1VH |
| L. W. Sayward | 87 Hamden Circle, Wollaston, Mass. | 1VI |
| E. M. Goddard | 17 Constance St., Maplewood, Mass. | 1VJ |
| Wm. Rosenbloom | 108 Thornton St., Revere, Mass. | 1VK |

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|---|---|---|
| A. A. LeMay | 1117 Hutton St., Troy, N. Y. | 2FA |
| Harold Cohn | 546 W. 146th St., New York | 2FB |
| Fred Clayton | 607 Emory St., Asbury Park, N. J. | 2FC |
| A. S. Brower | 19 South Clinton St., Poughkeepsie, N. Y. | 2FF |
| H. D. Scheller | 190 South St., Jersey City, N. J. | 2FH |
| Frederick A. Girard | Magnolia St., Montvale, N. J. | 2FJ |
| R. W. Freure | 439a McDonough St., Brooklyn | 2FK |
| F. McCartin, Jr. | 524 Paige St., Schenectady, N. Y. | 2FM |
| V. H. Schmitt | 158 Catherine St., Elizabeth, N. J. | 2FN |
| W. S. Blanchard | 401 Westervelt Ave., New Brighton, N. Y. | 2FO |
| Harold Peiler | 321 East 90th St., New York | 2FP |
| Jos. Pignone | 2065 Anthony Ave., New York | 2FQ |
| H. L. Stanley | Prospect St., Babylon, N. Y. | 2FS |
| W. E. Murray | 521 North James St., Peekskill, N. Y. | 2FT |
| Chas. I. Hertz | 501 West 144th St., New York | 2FU |
| N. S. Conover | 132 Milligan Place, South Orange, N. J. | 2FV |
| C. V. Macpherson | 590 West 172d St., New York | 2FW |
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| T. B. Ancell | 927 North Marsalis Ave., Dallas, Texas | 5CF |
| Marion Apple | 407 North Tennessee St., McKinney, Texas | 5CG |
| Arthur H. Holt | Kountze, Texas | 5CH |
| M. B. Patterson | Frost, Texas | 5CI |
| Ernest Albert Rodenhouse | 2738 Judson St., Shreveport, La. | 5CJ |
| Earl Sellers | Lucedale, Miss. | 5CK |
| James F. Burnes | 501 East Grand Ave., Marshall, Texas | 5CL |

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## Technical Tips

*by D.K. Owens*

**Substitutes for the WD-11**

Westinghouse introduced the WD-11 tube in 1922 for their Aeriola, Sr. (Model RF). They needed a tube which could be heated with cells instead of storage batteries. The WD-11 was also used in the RS, Regenoflex, Radiola X, Radiola III and Radiola III-A, sets m for RCA by Westinghouse. The development of this tube is well documented [1].

General Electric developed the UV199 tube independently, with the same objective of economical dry cell operation. The UV199 was introduced in 1923 with the Radiola IV. Its characteristics were similar to the WD-11 except for the filament demand of 3.3V/.06A vs. 1.1V/.25A for the WD-11. Besides its filament economy, the UV199 was also more robust and less microphonic.

The filament structure of the WD-11 is notoriously delicate. When a filament burns out, it may flop against the plate applying B+ to the filament circuit with disastrous results [2]. RCA chose the UV or UX199 for subsequent superheterodyne and regenerative receivers. N apparatus using the WD-11 was designed after 1924, and it became obsolete so quickly that RCA issued Service Bulletin #6 (Dec. 11, 1925) showing how to convert the Radiolas III and III-A to UX199 and UX120 tubes [3].

Westinghouse issued the WD-12, a UV-based version of the WD-11, in 1923. It was replaced by the UX-based WX-12 in 1925 for converting storage battery sets to dry cell operation. The Crosley "Pup" appears to be the only radio factory-designed for the WD- or W 12. The WD-11 and WX-12 were dropped from the official RCA product line in 1933 [4].

Those who want to play these early sets have a tube problem. RCA quit stocking WD-11 tubes 70 years ago. Today they are prohibitiv expensive, being worth more than the radios using them. Because of their value, those who have WD-11s are reluctant to put them int service.

UX199s can be used per the RCA bulletin. Adapters are still around, but both are quite expensive. The 864 (VT-24), developed for aircraft use, is a popular substitute because it has the same filament requirements and similar characteristics, but is also now quite expensive.

The Type 30 has been used as a substitute, but is both expensive and requires an oddball filament voltage. Another substitute is the Loctal 3D6, a beam pentode, connected as a triode and used with an adapter. Its filament requirements are similar to the WD-11. Miniature pentodes (1L4, 1S4, 3S4, 3Q4, 3V4) used in the same manner have also been described [5].

Another elegant solution is to use a miniature, wire-lead 5676 in a WD-11 base. A silvered test tube can be fastened over it over it to g the appearance of a WD-11.

**Testing Possible Substitutes**

I decided to carry out some tests on possible substitutes that would be cheap, plentiful, functional and resemble the WD-11. A look at t tube manual uncovered the following possibilities:

| Tube | Fil. V/A | Bias V | Plate mA | Gm | μ | Base | Price-$ |
|---|---|---|---|---|---|---|---|
| WD-11 | 1.1/.25 | -4.5 | 2.8 | 400 | 5.6 | Unique | 100+ |
| 864 | 1.1/.25 | -4.5 | 2.9 | 610 | 8.2 | 4-Pin | 25-35 |
| 1G4 | 1.4/.05 | -6.0 | 2.3 | 825 | 8.8 | Octal | 10-12 |
| 30 | 2.0/.06 | -4.5 | 2.5 | 850 | 9.3 | 4-Pin | 16-20 |
| 1LE3 | 1.4/.05 | -3.0 | 1.3 | 760 | 14.5 | Loctal | 4-5 |
| 1Q5 | 1.4/.10 | -4.5 | 5.8* | 1075* | 7.8* | Octal | 3-4 |
| 1A5 | 1.4/.05 | -4.5 | 5.6* | 1070* | 8.0* | Octal | 3-4 |
| 1LA4 | 1.4/.05 | -4.5 | 5.5* | 1065* | 8.1* | Loctal | 4-6 |

* Triode-connected (screen tied to plate)
All values with Ep = 90V

see website for additional adapters etc

The first four tubes are shown for comparison purposes only. Types 1G4, 30 and 864 are not good candidates due to their high cost. T last three turned out to be good possibilities. Characteristics of the triode-connected 1Q5, 1A5 and 1LA4 are not listed in tube manuals and had to be measured. The 1Q5 is a beam power tube and the 1A5 a power pentode. The 1LA4 is a 1A5 with a Loctal base. The characteristics of the other tubes were taken from the tube manual.

RCA recommends that the Radiola III-A be operated with 22.5V on the detector and 90V with -4.5V bias on the three amplifier tubes. Accordingly, the transfer characteristics of the WD-11, 864 and the possible substitutes were examined at Ep = 90V.

Fig. 1 shows the results. The WD-11, 1Q5 and 1A5 have long, linear transfer curves. The 864 and 1LE3 have a much narrower operat range. The steeper slope of the 1Q5 and 1A5/1LA4 reflect their higher transconductance. All the tubes have similar amplification factor (μ) except for the 1LE3 which is nearly twice that of the others.